

Guidelines for Oil and Grease Separators

Erie County Sewer Districts

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INTRODUCTION

The purpose of these guidelines is to facilitate compliance to the oil and grease management program pursuant to Part 403 of Title 40 Code of Federal Regulations (40 CFR) and the Rules and Regulations for Erie County Sewer Districts, Section 404 – Oil and Grease and/or Sediment Separators.

The objective is to prevent the introduction of excessive amounts of oil and grease into the County's wastewater collection system. An exterior oil and grease interceptor is required for adequate protection of the sanitary sewer system.

These guidelines are designed to insure uniform requirements for installation, operation, and maintenance of oil and grease separators within the jurisdiction of the Erie County Sewer Districts. Oils and greases are produced in quantity where commercial food preparation takes place and in certain industrial processes. Oils and grease as well as grit and sediments are also generated at vehicle maintenance shops and garages. These oils, and greases are limited to one hundred milligrams per liter (100 mg/l) in sewage discharges to the public sewer. This limit is necessary in order to protect against build-up and blockages of the sewer pipes and to prevent sewage treatment plants upsets.

I. APPLICABILITY

Oil and grease and/or sediment separators are to be provided when necessary for the proper handling of Sewage containing excessive amounts of oils and greases, sediment, or other harmful ingredients that are removable by a separator tank.

Businesses for which the guidelines apply include food service facilities and commercial establishments (i.e. restaurants, hospitals, nursing homes, banquet facilities, car washes, service and repair garages, etc.) whose wastewater discharge to the sanitary sewer may include sediment or oils and grease. Also included under these guidelines, are existing facilities whose oil and grease or sediment discharges evidence disruption to the operation of the Sewerage System and/or show inhibition to the sewerage system performance as described in Article IV, Section 401 of the Rules and Regulations for Erie County Sewer Districts.

The Erie County Sewer District's minimum standard for an oil and grease or sediment separator is an exterior unit of at least 750 gallons. Interior, under the counter oil and grease separators are designed to protect plumbing from blockages, but are not accepted for protection of the public sanitary sewer system. Plumbing codes specify that dishwashers not be connected to under the counter oil and grease separators. Dishwashers are a significant source of oil and grease which can accumulate downstream in the public sewer system. Furthermore, the under the counter type oil and grease separators are designed to gravimetrically separate or float the lighter oils and greases from wastewater. This separation mechanism is independent of the temperature of the wastewater. While temperature is not a factor in the design of under the counter type oil and grease separators, it is a factor in the build-up of oil and grease on the sewer pipe surfaces. As warm kitchen wastewaters enter the public sanitary sewers, they cool rapidly, and any oil and grease fraction that congeals at room temperature tends to adhere to the walls of the sewer pipe. This build-up of oil and grease is what contributes to sewer blockages. Therefore, while under the counter oil and grease separators are permitted by plumbing codes, and may protect the building plumbing from blockages, they do not substitute for the exterior oil and grease separator required by the Rules and Regulations for Erie County Sewer Districts.

II. DESIGN GUIDELINES

Sizing

Erie County Sewer Districts base separator sizing criteria on the NYSDEC publication "Design Standards for Wastewater Treatment Works" – 1988 Edition. The minimum acceptable size is 750 gallons. The Sewer District makes sizing determinations based on relevant information regarding the facility site, characteristics of the wastewater, and building plan review. Sizing must allow for adequate retention time and a workable maintenance schedule.

The formulas for sizing oil and grease interceptors, as given in the state publication are:

1. Restaurants:

(D) (GL) (ST) (HR/2) (LF) = size of grease trap, gallons, where:

D = Number of seats in dining area

GL = Gallons of wastewater per meal, normally 5 gallons

ST = Storage capacity factor (minimum = 1.7, onsite disposal = 2.5)

HR = Number of hours open

LF = Loading factor (interstate freeways = 1.25, other freeways and recreational areas = 1.0, main highways = 0.8, other highways = 0.5).

2. Hospitals, Nursing Homes, etc.:

(M) (GL) (ST) (2.5) (LF) = size of grease trap, gallons, where:

M = Meals per day

GL = Gallons of wastewater per meal, normally 4.5 gallons

ST = Storage capacity factor (minimum = 1.7, onsite disposal = 2.5)

LF = Loading factor (garbage disposal and dishwashing = 1.25, without garbage disposal = 1.0, without dishwashing = 0.75, without dishwashing and garbage disposal = 0.5).

In applying these formulas, the gallons of wastewater per meal should be carefully analyzed since the values quoted tend to be for a full course meal and place setting. The storage capacity factor is always 1.7, the number of hours open are only those in which meals are actually served, and the loading factor is usually between 1.0 and 0.5.

Alternative sizing criteria based on oil and grease loadings and retention time may be submitted for consideration on a case-by-case basis.

Temperature

The Rules and Regulations for Erie County Sewer Districts prohibit all discharges at temperatures that will inhibit biological activity at the Sewage Treatment Plant or cause damage to the Sewerage System. In no case may liquid or vapors having a temperature greater than 122 degrees Fahrenheit (50 degrees Celsius) be discharged or wastewater of such quantity and temperature as to cause the temperature of the influent at the treatment plant to exceed 104 degrees Fahrenheit (40 degrees Celsius). However, the District may require a lower temperature for oil or grease removal facilities.

Layout

The required plumbing connections to the oil and grease separator include kitchen sinks, bar sinks, dishwashers or like fixtures in addition to floor drains from kitchens and other food preparation areas. Floor drains in public areas such as vestibules, grocery, and seating areas are not required to connect to the separator. Wastewater drains from toilets, hand sinks, clothes washers or other personal hygiene fixtures shall not be connected to oil and grease separator.

In the plumbing layout of commercial buildings which are not restaurants but may in the future be suitable for food preparation, consideration should be given to the possible future need for an oil and grease separator. Wastewater drain lines from areas suitable for food preparation should

be kept separate from other wastewater drain lines to a point convenient to install an exterior oil and grease separator.

Installation

Proper installation is crucial for optimum performance of the separator. The Sewer District staff will include review of the oil and grease separator installation as part of the plan approval and inspection of the sewer connection.

Standard Detail No. 29 (attached), of the “Design Requirements for Subdivision and Sanitary Sewer Extension” published by and available from the Division of Sewerage Management, Erie County Department of Environment and Planning, (716) 858-8383, shows the grit trap/grease and oil separator.

The following are additional guidelines for proper installation. Grease and oil separators are to be:

- Vented correctly with a cleanout located immediately downstream;
- Readily accessible for inspection, cleaning, and maintenance;
- Shall not be installed backwards;
- Shall not have domestic wastewater connected into the separator;
- Shall be located as close as possible to the source of wastewater to be treated.

Application for a waiver from these requirements shall be reviewed on a case-by-case basis. Due to strict Federal prohibitions against Sanitary Sewer Overflows (SSOs), facilities that are unable to install properly sized oil and grease separators due to space limitations, may not be permitted to discharge oil and grease laden wastewater.

III. WAIVERS

Application Requirements

In extenuating circumstances, relief from the minimum requirements may be sought. Extenuating circumstances apply only to existing buildings that are either converted or modified for retail food sales, or commercial facilities with oil, grease, or sediment potential.

In some cases, an existing building and lot may be prohibitive for installing a 750-gallon exterior separator. Businesses demonstrating that an existing building layout prevents installation of an exterior separator (or grit chamber) which can also demonstrate that their oil, grease and/or sediment discharge will be controlled, may apply for a waiver.

An application for a waiver that describes the facility’s operations and facility’s layout must be submitted for review. The application shall include a description of how grease management will be implemented in a manner so as to prevent oil and grease, or grit from entering the sanitary sewer. The application, becomes a waiver when signed by the Sewer District. Alternative oil and grease/sediment control procedures or oil and grease/sediment separation devices less than the minimum standard will be considered on a case by case basis.

Any waiver granted shall be a conditional approval based on no resultant oil and grease or grit buildup in the sewer lines. In all cases it remains the Users responsibility to maintain the control devices in effective operating condition. The following information is to be submitted for consideration of a waiver:

1. *Reason for the Request.* To apply for a waiver, a written signed application is required explaining why a waiver is being requested. The application shall include a description as to why the County Standards for exterior oil and grease/grit separators cannot be met. Plans illustrating the existing layout of the facility shall be included as part of the description. The activities proposed for the site shall be presented to explain why oil and grease production from food preparation (or other oil, grease or sediment producing activities) will not result in excessive oil, grease, or sediment entering the sanitary sewer.

2. *Description of Management Practices.* A description of how oil and grease or sediment will be controlled in lieu of an outside separator is required. The “Best Management Practices” (BMP) that will be implemented during food preparation and cleaning operations shall also be included. BMPs include, but are not limited to, consideration of use of disposable dishware, use of off -site prepared foods, etc. If data are available from similar establishments, include this information also. Note that use of emulsifying or solubolizing substances, enzymes, heat or other similar treatments are not acceptable methods of oil and grease control.

3. *Proposed Facilities Plan.* Provide plans of the proposed modifications including equipment and plumbing. The layout of food preparation and serving areas, along with sewer connections, profiles and details shall be included. Dye, smoke testing, or televising, of existing sewers may be necessary where plumbing plans are not available. The proposed plans shall be described in terms of water use, food handling or preparation, and sanitation. The oil and grease or sediment removal and disposal procedures shall also be included.

4. *Grease Traps.* Where an exterior oil and grease separator is not being provided, interior separators, (herein referred to as Grease Traps), may be considered. The proposed type, size, location, and plumbing connections of the internal oil and grease separators (Grease Traps) shall be indicated.

Interior Grease Traps shall conform to the standard in the Plumbing and Drainage Institute (PDI) Standards G101. Grease Traps shall be installed in strict accordance with manufacturer’s instructions. Grease Traps shall be equipped with a cover that can be opened for inspection and sampling. A mechanism for a secure closing is also required.

The capacity of the Grease Trap shall be related to the flow rate as indicated in the Table 1 and the appendix of the PDI Standards G101 document. Flow-through rates shall be calculated in accordance with the procedures in the PDI Standard G101. Grease Traps shall be equipped with a device to control the rate of flow through the unit. The rate of flow in gallons per minute shall not exceed the manufacturers rated capacity recommended for the unit. The flow-control device and the Grease Trap shall be vented in accordance with the New York State Plumbing Code’s current edition. The flow-control device shall be vented and terminate not less than six (6) inches above the flood rim level or be installed in accordance with the manufacturer’s instructions.

5. *Maintenance.* The User shall be solely responsible for the cost of Grease Trap installation, visual inspection, cleaning, and maintenance. Users may contract with a permitted grease hauler for cleaning services, or may develop a written protocol to perform Grease Trap cleaning and disposal. Cleaning and maintenance is recommended when the total volume of the captured grease and solid material displaces more than 25% of the total storage volume of the unit. The User shall determine the frequency at which their grease traps shall be cleaned. All Grease Traps shall be opened and visually inspected, at least once per week, and cleaned and maintained as necessary. The User shall be responsible for maintaining the Grease Traps in working order. Grease and solid materials removed from Grease Traps shall be disposed of as solid waste.

6. *Maintenance Agreement.* The signed application acknowledges that the information therein is true and correct, and that the activities therein will be implemented.

7. *Recordkeeping.* Facilities shall maintain records of the date and time of all visual inspections, cleaning, and maintenance events for each Grease Trap in a bound logbook and shall make this book available for inspection. Any disposal invoices shall also be maintained and made available upon request. The logbook and invoices shall be kept on file for a minimum of three (3) years. The written protocol for cleaning and maintenance procedures shall also be readily available for inspection.

Waiver Approvals

Applications for a waiver will be considered on a case by case basis. If the application is approved, District signature of the application will constitute waiver approval. The waiver will remain effective on a conditional basis pending continued compliance with the oil and grease discharge limits.

The waiver is non-transferable. A new application shall be submitted if ownership should change. The waiver may be withdrawn upon development of oil and grease or grit problems in the public sewer traceable to the site; or if the commercial or institutional activity at the site materially changes. Any User whose discharge results in sewer blockages shall be grounds for termination of the waiver.

IV. OPERATIONS

Inspections

The User is responsible for maintaining the oil and grease separator in efficient operating condition. This requires regular inspections, servicing and cleaning. The Sewer District maintains the right to inspect and sample oil and grease separators in order to determine compliance with the Rules and Regulations for Erie County Sewer Districts.

Regular inspections of the oil and grease separator are critical for establishing proper maintenance and efficiency. Through frequent inspections, a regular cleaning schedule can be established. Structural components shall also be inspected regularly for potential problems i.e., damaged baffles, cover gasket, or blocked air relief valves. Finally, it is recommended that inspections are conducted before and after the oil and grease separator is serviced.

Service

Servicing by removing the accumulated fats, oils and greases is required to be performed at frequencies necessary to protect the sewer system against accumulation of grease and oils. The Division of Sewerage Management recommends the 25% rule. The rule specifies that the depth of oil and grease (floating and settled) shall not be greater than 25% of the total operating depth of the separator. The operating depth is determined by measuring the internal depth from the outlet water elevation to the bottom of the oil and grease separator.

All oil and grease separators are to be pumped completely when serviced. Excessive solids must be scraped from the walls and baffles, and inlet/outlet ports shall be cleared. Separated gray water already pumped may be re-introduced only after a minimum duration of twenty (20) minutes retention time in the truck's tank. No oil, grease, or solids may be re-introduced into the oil and grease separator.

The use of enzymes, solvents, or emulsifiers does not substitute for the exterior oil and grease separator requirement. Additives to treat oils and greases in separators have not been found effective in preventing oil and grease accumulations in the public sewerage facilities. Furthermore, where oil and grease separation is disrupted, the trapped oil and grease may be released from the oil and grease separator and add to downstream problems.

Accordingly, temperature requirements for the sewer discharge are also imposed. The local regulations require that all discharge temperatures remain below 122 degrees Fahrenheit. With oil and grease removal facilities, the Sewer District may require lower temperatures.

Maintenance

In order to maintain compliance and minimize generation of odors, the County recommends a minimum cleaning frequency of once every three (3) months. However, due to facility's various operational conditions, cleaning may be required as often as once a week to ensure compliance.

V. DISPOSAL

It is the responsibility of the facility's owner/operator to ensure that the oil and grease waste hauler is in compliance with all Federal, State and local regulations concerning the pumping of oil and grease separators and the hauling and disposal of their contents.

VI. RECORD KEEPING

The facility User shall maintain records of the date and time of all cleaning, maintenance, and inspection of the separator(s) in a bound logbook. Waste hauler manifests showing the name of the hauler, dates of service, quantity of waste removed, and final disposal site shall be maintained on site for a minimum period of three (3) years. All records shall be available for inspection by the Sewer District.

VII. PENALTIES

Should the Sewer District find that a User has violated or is violating any provision of the Rules and Regulations, on which these Guidelines are based, the District may serve the owner/operator a Notice of Violation. The facility shall have a twenty (20) day period to make corrections required to bring the facility into compliance. Should circumstances require additional time, a request to the District shall be made within the twenty day period. Approval is subject to the acceptance of the schedule by the District.

The User causing excessive oil and grease back ups may be held responsible for costs associated with cleaning and inspecting the sanitary sewer system in order to return it to normal operation. The User may also be subject to penalties for failure to comply with the Rules and Regulations for Erie County Sewer Districts that govern the use of the sanitary sewer system, including suspension of discharge privileges.

Information regarding these guidelines is available from the Erie County Sewer District offices; the Southtowns Advanced Wastewater Treatment Facility, S-3690 Lake Shore Road, Buffalo, NY 14219, phone (716) 823-8188; or the Division of Sewerage Management, 95 Franklin Street, Room 1034, Buffalo, NY 14202, phone (716) 858-8383.

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